

March 16, 1951.

Dear Aaron:

Have you any word on the best way to order the special glassware and pumping-control setup on the chemostat? We'll have to write the order by early next week to have the funds clear.

Kim Atwood's paper on periodic selection came out in PNAS last week. This is the one I talked to you about in Chicago. There have been a few minor improvements from the ms., but the basic argument is still the same. We'll have a good opportunity to argue this out at CSH in June, but I wonder whether we couldn't discuss it before then.

Kim's most important point seems to be the argument that periodic selection acts as a perpetual self-purifying mechanism which can act to protect an evolving population from the deleterious effects of mutation pressure, which, presumably, favors auxotrophy over prototrophy. I can't see how this can be a result of a sampling sequence which does not discriminate between wild type and mutant allele. Kim seems to feel that the non-discrete nature of the sampling process which he envisages could have such an effect (i.e., that the unit of sampling is not 1 cell, but 1000). To my mind, the effects of such samplings might be a deviation or rather fluctuation from the expected course, but that the population will continue to tend towards equilibrium at an effective rate not greatly different from that anticipated without such selection. Kim will probably argue that his experimental populations come to some sort of equilibrium, but this may mean that his explanatory theory is incomplete.

I've been hoping that you and Szilard might be working out a smoothed out theory for the evolution of populations under KCA's postulates. Is there any special difficulty attached to this?

The weather has been kind of raw, but when it gets warmer I hope that you and Jane will remember your promise to drive North with us for a couple of days touring.

My brother Seymour visited a couple of weeks ago, but came midwest mostly to see Luria. He writes that he is probably going to Illinois in Botany or Bact., so you'll probably be running into him. The newest here, if it pans out, is some of Zinder's stuff on Salmonella. There is a filtrable agent of some sort which can yield proto- out of auxo-trophs. Minute cells, gametes, or transformings- we don't know.

Sincerely,